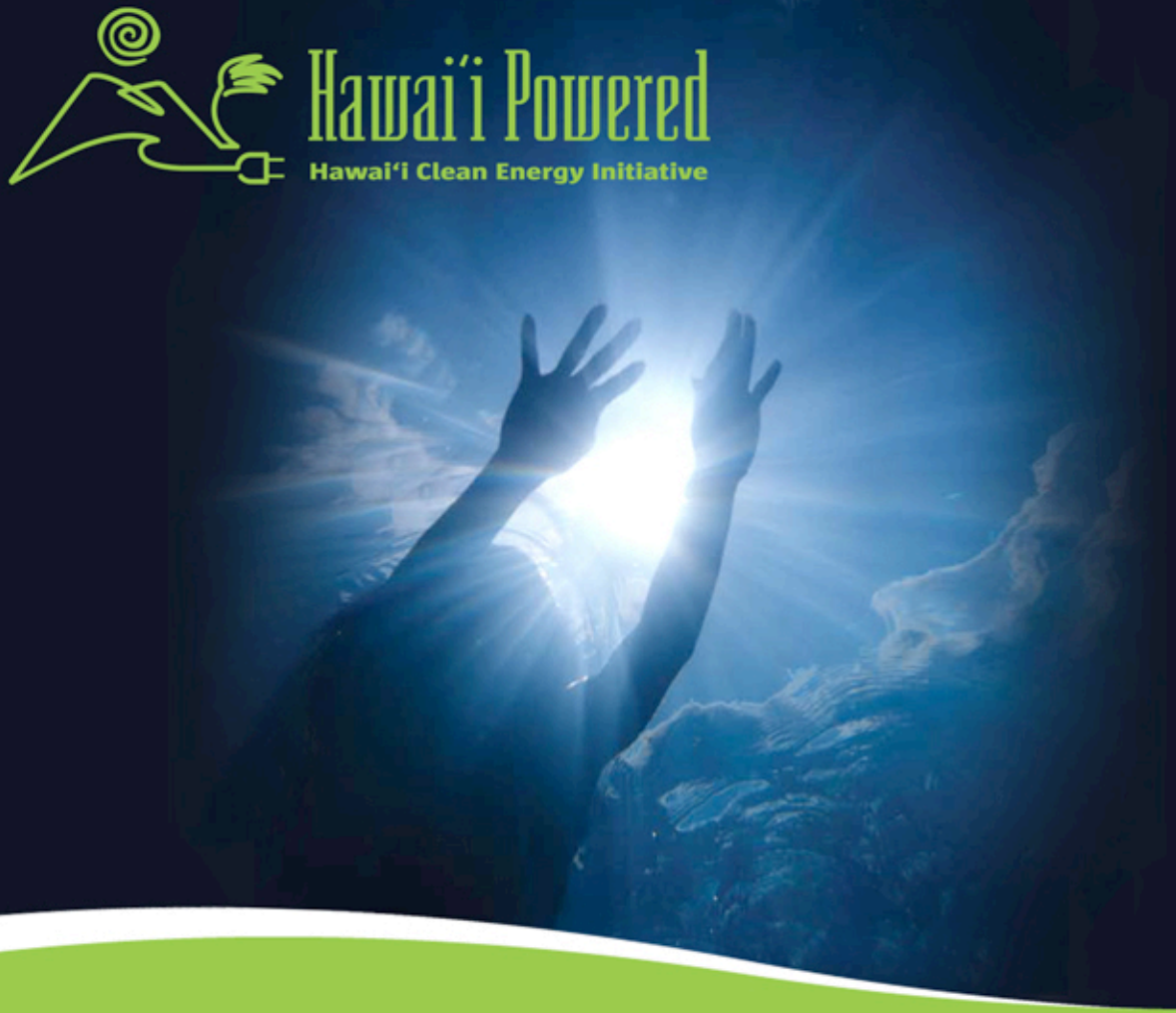
# Renewable Energy Zones



Hawai'i Powered

Hawai'i Clean Energy Initiative

Renewable Energy Zone Meeting

September 29, 2009

Debbie Lew
NREL

# Overall Direction

- Act 155 (June 2009) requires DBEDT to:
  - **Identify Renewable Energy Zones (REZ) - renewables rich areas that are cost-effective and environmentally benign**
  - **Encourage development of these REZs and transmission to access these zones**
- HCEI agreement calls for REZ to be performed in conjunction with Clean Energy Scenario Planning (CESP) and for transmission access to be facilitated

# Adaptation of REZ for Hawaii

- Originally developed to address:
  - **Long distance transmission development to renewables rich areas and**
  - **Cost recovery for transmission built in advance of generation because transmission lead times are longer than renewables**
- Hawaii needs
  - **Publicly accessible, higher resolution, higher accuracy renewable energy resource data**
  - **Information on where development faces significant land-use/ permitting hurdles**
  - **Facilitation of transmission expansion/upgrades to access renewables**
  - **Facilitation of development of projects (policies, incentives, streamlined permitting, etc)**

# DBEDT's Bottom Line

- DBEDT wants to be proactive and help developers get projects in the ground and help utilities facilitate the needed infrastructure
- DBEDT is wary of unintended consequences and getting in the way of other processes
  - **REZ designation may drive land costs up for developers**
  - **Strong incentives for REZ projects may stall out existing project development**
  - **Existing law doesn't add any real authority to what DBEDT is already doing**

# Initial REZ Tasks

- Assess and update renewable energy resource datasets
- Develop GIS-based web interface for resource data
- Develop tiered criteria for screening based on land use, environmental constraints, etc. Ease of permitting could be included.
- Identify renewable resource areas of high quality and sufficient quantity. Develop preliminary cost of energy assessments.
- Feed into CESP - information on where resources are, when new technologies are projected to be mature, cost of energy curves

# Resource datasets

- Wind
  - **200m AWS maps, 1km AWS time-series dataset**
- Geothermal resource
  - **2004 GeothermEx**
- Wave Energy
  - **Bathymetry-based hard copy maps, new assessments by EPRI and Army Corps of Engineers**
- Hydro
  - **New assessments by Army Corps of Engineers, INEEL study**
- OTEC
  - **UH analysis**
- Solar
  - **Sunshine maps, 10 km SUNY/Albany data, 1km satellite data**

# EXTRA SLIDES

# Coordination of REZ and CESP